

WE CLAIM:

1 1. A method of communicating Constant Bit Rate ("CBR") data and Variable
2 Burst Rate ("VBR") data in a single RF carrier via a communication system, said method
3 comprising the steps of:

4 determining whether the data stream is CBR or VBR;

5 when said data stream is CBR, communicating the CBR data stream using Code
6 Division Multiplexing/Code Division Multiple Access ("CDM/CDMA") with first spreading
7 factor codewords, whereby a CBR-CDMA data signal is generated; and

8 when said data stream is VBR data, communicating the VBR data stream using
9 Time Division Multiplexing/Time Division Multiple Access ("TDM/TDMA") and
10 CDM/CDMA with second spreading factor codewords.

1 2. The method according to claim 1, wherein the step of communicating the
2 CBR data stream using CDM/CDMA comprises the steps of:

3 spreading the CBR data stream at a transmitter using CDM/CDMA with the
4 first spreading factor codewords; and

5 transmitting the CBR-CDM or CBR-CDMA data signal in an allocated
6 transmission channel.

1 3. The method according to claim 1, wherein the step of communicating the
2 VBR data stream using TDM/TDMA and CDM/CDMA comprises the steps of:

3 spreading the VBR data stream at a transmitter using CDM/CDMA with the
4 second spreading factor codewords; and

5 transmitting the VBR-CDMA data signal in an allocated transmission channel.

1 4. The method according to claim 1, wherein the step of communicating the
2 VBR data stream using TDM/TDMA and CDM/CDMA comprises the steps of:

3 spreading the VBR data stream at a transmitter using CDM/CDMA with the
4 second spreading factor codewords;
5 placing the VBR-CDMA data signal in data packets;
6 interleaving the data packets with TDM/TDMA to generate a VBR-CDMA-
7 TDMA data signal; and
8 transmitting the VBR-CDMA data signal in an allocated transmission channel to
9 a receiver.

1 5. The method according to claim 1, wherein said step of communicating the
2 VBR data stream using TDM/TDMA and CDM/CDMA further comprises the steps of:
3 despread and extracting such signal using the corresponding first spreading
4 factor codeword and necessary processing.

1 ~~6. The method according to claim 4, wherein said step of communicating the~~
2 ~~VBR data stream using CDM/CDMA further comprises the steps of:~~
3 ~~despread and extracting the CBR-CDM or CBR-CDMA data signal using the~~
4 ~~corresponding first spreading factor codeword and necessary processing.~~

1 7. The method according to claim 1, wherein said step of communicating the
2 VBR data stream further comprises the steps of:
3 spreading the VBR data stream at a transmitter using CDM/CDMA with the
4 second spreading factor codewords;
5 placing the spread VBR-CDM or VBR-CDMA data signal in data packets;
6 interleaving the data packets with TDM/TDMA into a single TDM/TDMA data
7 signal to generate a VBR-TDM-CDM or VBR-TDMA-CDMA data signal; and
8 transmitting said data signal in an allocated transmission channel to a receiver.

1 8. The method according to claim 4, wherein said step of communicating the
2 VBR data stream using TDM/TDMA and CDM/CDMA comprises the steps of:

3 despreading the VBR-TDM-CDM or VBR-TDMA-CDMA data signal using the
4 second spreading factor codeword and necessary processing; and

5 deinterleaving the VBR-TDM-CDM or VBR-TDMA-CDMA data signal with
6 TDM/TDMA.

1 9. The method according to claim 1, wherein the first spreading factor
2 codewords are calculated based on the data rate required for the corresponding applications and
3 the second spreading factor codeword is calculated based on the available transmission power
4 after the necessary power has been allocated to all those signals using the first spreading factor
5 codewords.

1 10. The method according to claim 4, wherein the first spreading factor
2 codewords are calculated based on the data rate required for the corresponding applications and
3 the second spreading factor codeword is calculated based on the available transmission power
4 after the necessary power has been allocated to all those signals using the first spreading factor
5 codewords.

1 11. The method according to claim 1, wherein said communication system
2 simultaneously accepts CBR and VBR data streams, the CBR and VBR data streams being
3 communicated as an aggregated signal.

1 12. The method according to claim 11 further comprising the steps of:
2 modifying the first spreading factors codewords on-the-fly for the CBR portion
3 of the aggregated signal; and

4 modifying the second spreading factor codewords on-the-fly for the VBR
5 portion of the aggregated signal.

Sub 13. The method according to claim 1 wherein one of the first spreading factor
2 codewords are different from the second spreading factor codewords and the first spreading
3 factor codewords are the same as the second spreading factor codewords.

1 14. A communication system for communicating CBR data and VBR data in a
2 single data stream comprising:

3 a transmitter for determining whether the data is CBR and VBR;

4 if said data stream comprises CBR, the transmitter communicating the CBR data
5 stream using CDM/CDMA with first spreading factor codewords, whereby a CBR-CDM or
6 CBR-CDMA data signal is generated; and

7 if said data stream comprises VBR, the transmitter communicating the VBR data
8 stream using TDM/TDMA and CDM/CDMA with second spreading factor codewords,
9 whereby a VBR-TDM-CDM or VBR-TDMA-CDMA data signal is generated, the first
10 spreading factor codewords being different from the second spreading factor codewords.

1 15. The communication system according to claim 14, further comprising:

2 the transmitter spreading the CBR data stream using CDM/CDMA with the first
3 spreading factor codewords.

1 16. The communication system according to claim 14, further comprising:

2 the transmitter spreading the VBR data stream using CDM/CDMA with the
3 second spreading factor codewords.

1 17. The communication system according to claim 14, further comprising:

2 the transmitter spreading the VBR data stream using CDM/CDMA with the
3 second spreading factor codewords, placing the VBR-CDM or VBR-CDMA data signal in data
4 packets and interleaving the data packets with TDM/TDMA to generate a VBR-TDM-CDM or
5 VBR-CDMA-TDMA data signal.

1 18. The communication system according to claim 17, further comprising:
2 if the intended signal is a CBR-CDM or CBR-CDMA data signal, the receiver
3 despreding the CBR-CDM or CBR-CDMA data signal using CDM/CDMA with the first
4 spreading factor codewords.

1 19. The communication system according to claim 17, further comprising:
2 if the intended signal is a CBR-CDM or CBR-CDMA data signal, the receiver
3 despreding the CBR-CDM or CBR-CDMA data signal using CDM/CDMA with the first
4 spreading factor codewords.

1 20. The communication system according to claim 14, further comprising:
2 the transmitter spreading the VBR data stream using CDM/CDMA with the
3 VBR spreading factor codewords, placing the VBR-CDM or VBR-CDMA data signal in data
4 packets and interleaving the data packets with TDM/TDMA to generate a VBR-TDM-CDM or
5 VBR-TDMA-CDMA data signal.

1 21. The communication system according to claim 17, further comprising:
2 if the intended signal is a VBR data stream, the receiver despreding the VBR-
3 TDM-CDM or VBR-TDMA-CDMA data signal using CDM/CDMA with the second spreading
4 factor codewords; and
5 the receiver deinterleaving the VBR-TDM or VBR-TDMA data signal with
6 TDM/TDMA.

1 22. The method according to claim 14, wherein the first spreading factor
2 codewords are calculated based on the data rate required for the corresponding applications and
3 the second spreading factor codeword is calculated based on the available transmission power
4 after the necessary power has been allocated to all those signals using the first spreading factor
5 codewords.

1 23. The method according to claim 17, wherein the first spreading factor
2 codewords are calculated based on the data rate required for the corresponding applications and
3 the second spreading factor codeword is calculated based on the available transmission power
4 after the necessary power has been allocated to all those signals using the first spreading factor
5 codewords.

1 24. The communication system according to claim 14 wherein said
2 communication system simultaneously accepts CBR and VBR data streams, the CBR and VBR
3 data streams being communicated as a single aggregated signal.

1 25. The communication system according to claim 24, further comprising:
2 the transmitter modifying the first spreading factors codewords on-the-fly for the
3 CBR portion of the aggregated signal; and
4 the transmitter modifying the second spreading factor codewords on-the-fly for
5 the VBR portion of the aggregated signal.

1 26. The communication system according to claim 14 wherein one of the first
2 spreading factor codewords are different from the second spreading factor codewords and the
3 first spreading factor codewords are the same as the second spreading factor codewords.

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